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GRAPHIC MASTER

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INTRODUCTION

GRAPHIC MASTER is the first program of its kind to bring professional quality Computer Aided Design features to your ATARI® 800 Home Computer. A step ahead of other graphics generating programs, GRAPHIC MASTER provides TWO independently functional HIGH RESOLUTION screens (320 x 192 pixels each). You can load pictures or symbols to either screen without disturbing the contents of the other. Then, using other GRAPHIC MASTER features, you can move images from one screen to the other, draw new images, or even label your designs with various sized text.

Some possible uses for GRAPHIC MASTER are:

1. Electronic Circuit Layout
2. Logic Design
3. Architectural Design
4. Floor Plan Layout
5. Business Charts and Graphs
6. Chemical Design
7. Landscape Planning
8. Computer Art

GRAPHIC MASTER offers many special features normally found only in large, more expensive, computer graphics systems. It uses a variable sized window to grab, manipulate and move both pictures and designs from screen to screen in much the same manner as a production artist does "Cut & Paste". GRAPHIC MASTER provides more than 30 single and multiple key commands that allow the user to alter the contents of the window or screen picture. Commands to ROTATE, INVERT, SKEW, ZOOM, MIRROR, SHIFT, UNDERLAY and OVERLAY make GRAPHIC MASTER the most versatile graphics program currently available for the Atari computer.

Included with your GRAPHIC MASTER program are screens of Electronic and Chemical symbols that can be combined to create circuit designs and experiment diagrams. A Palette of various color patterns is also provided for painting your own pictures and designs. With GRAPHIC MASTER you can SAVE your creations on disk or PRINT out a hardcopy on an Epson® MX-70 or MX-80 with Graphtrax™ ROMS installed.

SYSTEM REQUIREMENTS: ATARI® 800, 40K RAM BASIC language cartridge, 1 disk drive (minimum) and 1 joystick. Optional system will also include an ATARI interface module and either an Epson® MX-70 or MX-80 with the Graphtrax™ ROM option.

NOTE: *A special version of GRAPHIC MASTER is included for owners of the NEC® 8023-A printer. See page 17 for instructions on configuring your diskette.*

START UP AND STRUCTURE

To use GRAPHIC MASTER, place the program diskette in drive #1. Install the BASIC Language cartridge and turn ON the computer. Connect your joystick to controller jack #1. The program will load automatically and begin operation by filling the screen with the GRAPHIC MASTER title frame. A small square made up of white dots called the EDIT window will appear in the upper left-hand corner of the screen. You are now in the GRAPHIC MASTER EDIT Mode. You can perform any of the command functions described on the following pages while you are in the EDIT mode.

GRAPHIC MASTER has four modes of operation. They are the EDIT Mode, I/O Mode, TEXT Mode and DRAW Mode. Each mode has a set of specific functions. Commands to perform any function or operation are entered by pressing one key or a sequence of keys.

1. The EDIT Mode.

GRAPHIC MASTER always starts off in the EDIT mode. Most graphic manipulations are performed in this mode. All other modes are accessed from the EDIT mode and will return you there upon exit.

A joystick is used while in the EDIT mode to move an EDIT window around the screen. A dotted border surrounds the EDIT window to help identify its current size and location. Special key commands allow you to vary the size and movement of the window for positioning anywhere on the screen you desire.

Once "grabbed" by the EDIT window, an object or picture section can be moved to another location on the screen or incorporated into another picture on the second screen. Special function keys also allow you to manipulate the contents of the EDIT window in a variety of ways or to alter the screen background without affecting the window contents. Using key functions individually and in combination will produce a wide variety of entertaining and useful results.

Command keys and their EDIT mode functions are explained in detail further on in this guide. Use the joystick now to move the edit window around the screen and become familiar with its appearance and movement.



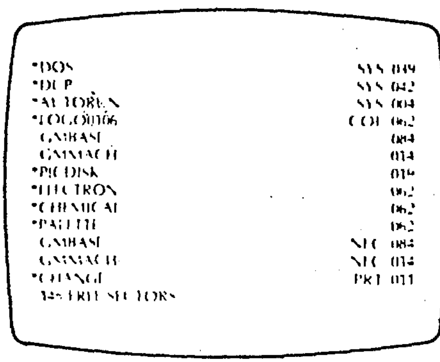
2. INPUT/OUTPUT Mode.

Press the "OPTION" key while in the EDIT mode to enter the Input/Output (I/O) mode. This mode allows the user to LOAD the contents of a graphics file from disk to a desired screen, SAVE a screen to disk as a new graphics file or examine a diskette DIRECTORY. This mode is self-prompting. Disk functions are selected by pressing the first letter of the desired operation and answering the subsequent screen prompts.



All commands in the I/O mode assume you want to acce[ss] drive #1. Other drives may be addressed by first ente[ring] a D[OS] device designator and a drive number (eg. D2:). To [LO]AD [or] SAVE a file simply enter the filename after the prompt an[d] press the "RETURN" key. If you have accidentally pressed th[e] wrong key and don't wish to LOAD or SAVE a file, press th[e] "RETURN" key when asked for the filename. This will retu[rn] you to the EDIT mode. After entering a filename, the progra[m] will ask on which screen you wish to SAVE or LOAD an imag[e]. When you enter the I/O mode, GRAPHIC MASTER will alwa[ys] display screen #1. Enter a 1 or 2 following the prompt "WHIC[H] SCREEN" (followed by a RETURN) to SAVE from or LOAD t[o] your choice of screens.

The DIRECTORY command lets you examine the content[s] of a diskette (in drive #1 only). Filenames are displayed one lin[e] at a time at the bottom of your screen. Press the "OPTION" ke[y] as prompted to step through the files. You will automaticall[y] return to the EDIT mode after the remaining free sectors ar[e] displayed. You may also press the "START" key any time dur-ing the directory display to exit. Other key commands will no[t] function while in the I/O mode.



With the exception of SAVING files created by other graphics programs, this is the only discussion of the INPUT/OUTPUT Mode in this guide. If you wish to experiment with the above functions now, please do so. We recommended that you first view the directory and load one of the graphic files provided to screen #2. Press the "SELECT" key to switch between screen #1 and screen #2 and observe the results. Files SAVED with GRAPHIC MASTER must be deleted using your Atari DOS diskette.

3. The TEXT mo

The TEXT mode lets you place text and graphic characters on the screen with your other images. Schematics can be documented, dimensions displayed and so forth.

You may display the standard Atari text and graphic font on your screen in your choice of three sizes. You can also load and display your own custom font and alternate between it and the ATARI font at will.

To enter the TEXT mode, press the "X" key while in the EDIT mode. The screen border will turn green (on a color display) to indicate you have entered this new mode. Press the "ESC" key to exit and return to the EDIT mode. You must type your characters slowly to avoid skipping.

Before you enter the TEXT mode you must first define the size of the font you wish to use. Please refer to the section on EDIT MODE KEY COMMANDS for a complete explanation of this mode. We recommend that you do not experiment with this mode until you are familiar with the remaining GRAPHIC MASTER functions.

4. The DRAW Mode.

Press the "D" key while you are in the EDIT mode to enter the DRAW mode. The screen border will turn ORANGE while you are in this mode. Press the "ESC" key to exit this mode and return to the EDIT mode.

The DRAW mode is used to create your own detailed pictures and symbols. Use your joystick to move a tiny (one pixel) flashing dot. Press the joystick button to leave the dot on the screen. Hold the button down as you move the stick to draw lines. The amount of space between each dot may be changed at any time by pressing a number key from 1 to 9 (or 0 for 10) representing one to ten pixels between each dot.

The tiny flashing dot may be difficult to locate on some screens. To find the dot, simply press the "SPACE" bar. A small block will momentarily appear. The tiny cursor can be found at the top edge of this locating block.

Three specific functions are available while in the DRAW mode in addition to free line drawing using the joystick. These functions can be used to draw geometric shapes for symbol screens (such as the chemical and electronic pictures files on your Graphic Master diskette). These built-in functions are LINE, CIRCLE and POLYGON.

LINE ("L" key)

Use this function to draw a straight line between any two points. Position the tiny flashing dot (using your joystick) to a point on the screen where you wish to start your line. Press the "L" key to plot that point on the screen. You will immediately hear a "chirping" sound from your T.V. Now, use your joystick to move the dot to a point on the screen where you wish to end your line. Press the "L" key again. A straight line is drawn between the two points you selected. A series of connected lines can be drawn in this manner to produce various shapes.

CIRCLE ("C" key)

This command lets you automatically draw a circle centered on the current position of the tiny flashing cursor. To select a size, press a number key from 1 to 9 (or 0 for 10) before you press the "C" key. Size 1 produces the smallest circle. Size 0 (or ten) produces the largest available circle.

A solid white disk may be created by holding down the "OPTION" key and the "C" key at the same time.

POLYGON ("P" + "3"-"9" keys)

This command produces a multi-sided figure of your choice centered on the position of the tiny flashing dot. The size of a polygon is selected before you press the "P" key (as in the circle command above). Dot offsets from one to ten (where 0 equals ten) produce different sized figures, (from small to large). Simply select the size of your intended polygon, press the "P" key, then press a number key from 3 to 9 to indicate

the number of sides you wish. For example: pressing the keys "4" + " P" + " _ while in the DRAW mode will produce a number four sized polygon with five sides (also known as a pentagon).

NOTE: *If you do not indicate a specific size for your polygon, the current offset number will be used as the default size. Again, please see the section on EDIT MODE KEY COMMANDS for a complete explanation of offset numbers.*

ARTIFACT COLORS:

It is possible to draw pictures in color using the natural artifact colors of your T.V. set or color monitor. First, observe the color of the tiny flashing dot when you are in the DRAW mode. Colors are created by turning on pixels in a specific pattern. The horizontal position of a pixel determines what color will be displayed on the color screen. For example, every other pixel on a horizontal line will be GREEN or BLUE, while its neighbor on either side will be RED or PURPLE, depending upon how your set is adjusted. By combining these colored pixels in different patterns, new colors can be created.

For example, move the tiny dot until it is flashing GREEN and draw a vertical GREEN line. Now, using an offset number of 1, move the dot to the pixel immediately to the right of the green line (using the joystick) and draw a BLUE or PURPLE line next to it. The colors will seem to merge and form a light yellow line. Likewise, if you first draw a BLUE or PURPLE line and draw a green line to the right of it, they will merge into a light blue line.

To create new colors, draw a horizontal or diagonal line using an "odd" offset number. Then, using the EDIT window, SHIFT, INVERT and DUPLICATE the line until a new, distinct color appears. This method was used to create the 50 colors and patterns found in the "PALETTE" picture file, LOAD the palette file and practice "painting" on the screen. Later you may want to create your own palette file.

It's important to remember that the adjustment of your own color T.V. set determines the way artifact colors are displayed. Your colors may appear as BLUE and RED or GREEN and PURPLE, but combining them will produce

different colors. GRAPHIC MASTER was written to preserve these colors when moving them in the window or overlaying one colored area over another. It is possible, however, to change the horizontal relationships of the colored pixels when using the ROTATE or SKEW commands (explained later in this guide). The best way to learn about color manipulation is to experiment and judge the results for yourself.

EDIT MODE KEY COMMANDS

The following EDIT MODE commands are used to manipulate and control the contents of the EDIT window without affecting the screen image. Please read this section carefully and bear in mind that we cannot possibly explain all possible combinations. If you discover additional features, Datasoft would enjoy hearing your comments.

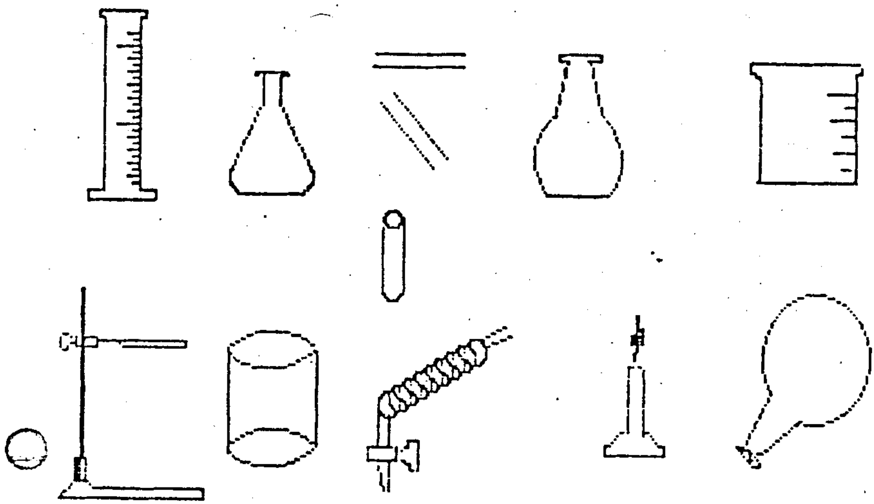
OFFSET ("1"-"0" keys)

The number keys on your keyboard control the amount of horizontal and vertical distance between each window position as they move around the screen. The smallest incremental offset (1) is one byte (8 pixels) horizontally by two lines vertically. The maximum offset (0) is 10 bytes (80 pixels) by 20 lines vertically. The window offset can be changed at any time. Experimentation will show you a number of ways that this feature can be used to your advantage. We have found that an offset of "1" often works best for positioning the window over an object, while a larger offset number lets you move a window around the screen faster.

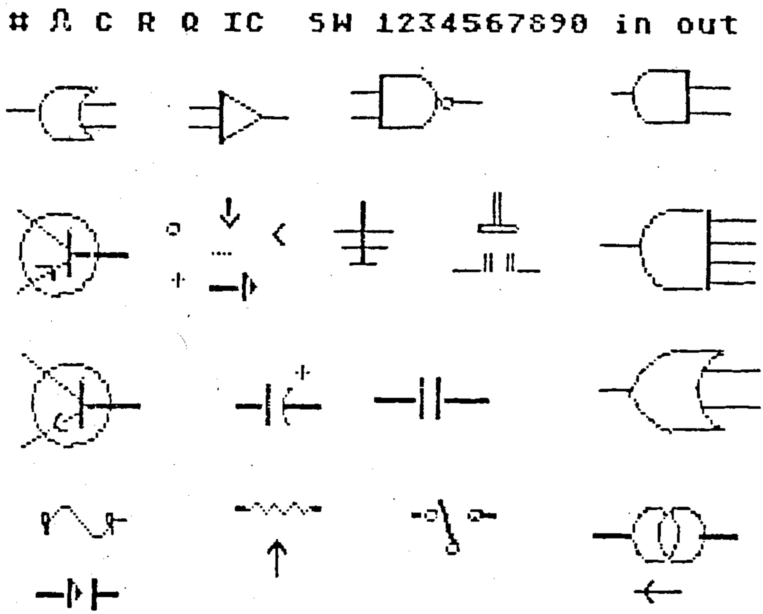
HINT: Setting the offset number equal to the window size will let you to lay down a series of images side by side.

WINDOW SIZE ("W" + "1"-"0" keys)

Ten window sizes may be selected while in the EDIT mode. Press the "W" key followed by a number key to determine the size of the EDIT window. The smallest window size (1) measures 8 pixels wide by 8 lines high, while the largest window (0) is 80 pixels wide by 80 lines high. Sections of a picture "grabbed" by the EDIT window may be moved and manipulated using the EDIT mode commands. The window size can be changed at any time. However, the current window contents will be dropped and replaced by the border.



(CHEMICAL Symbols)



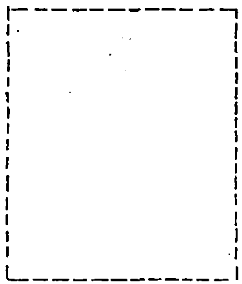
(ELECTRONIC Symbols)

GRAB ("G" key)

Press the "G" key to "grab" a copy of screen image currently beneath the EDIT window. The dotted WHITE border frame will disappear when the "G" key is pressed. A "window-sized" copy of the screen image can now be moved around the screen using the joystick. It is important to remember that in most cases an object must be "grabbed" before it can be manipulated with other EDIT mode commands.

JOYSTICK BUTTON

When you press the joystick button, a copy of the window image is left behind at that screen location. Be careful not to press the button when the dotted WHITE window border is on the screen or you will leave a copy of the window border in that position.



EDIT WINDOW

FLIP SCREENS ("F" key)

Press the "F" key to move the EDIT window (and its contents) to the same position on the alternate screen. Use the "SELECT" key to switch screens WITHOUT moving the EDIT window. Make sure you are viewing the screen containing the EDIT window before you press the "F" key.

Use the GRAPHIC MASTER title frame and EDIT mode commands we have discussed and experiment with what you have learned thus far. Select a "Window Size" and "grab" a section of the title frame. Move it to the alternate screen (press "F" and leave the image behind by pressing the joystick button).

BORDER ("B" key)

Press the "B" key to return the transparent, dotted white border to the EDIT window. This replaces any image previously stored there. You can now return to the alternate screen and grab a different object or section of your picture.

ERASE WINDOW ("E" key)

Press the "E" key and the EDIT window will become black and opaque. The window can now be moved around the screen with the joystick. Whenever the joystick button is pressed the screen area beneath the window will change to solid black. You may use the BORDER command above to exit this feature and restore the dotted white border to the window.

If you wish to ERASE an entire screen, hold down the "CTRL" key and the "START" key at the same time then press the "E" key. The contents of the screen you are currently viewing will be erased. Your window image will remain intact. GRAPHIC MASTER purposely makes it difficult to destroy an entire screen to prevent accidental erasures.

TRANSPARENT ("T" key)

This is a powerful command which makes the black areas within the EDIT window transparent. Images on the screen will show through the black areas of the EDIT window as you move it. This lets you draw, paint or OVERLAY one image over another. GRAPHIC MASTER automatically sets up a transparent window when the program is first used and when the window size is changed.

OPAQUE ("O" key)

When this feature is selected, the black areas of the EDIT window will become opaque and block out any image on the screen area beneath it. Use the transparent command to exit this feature. Again, experimentation is your best instructor.

UNDERLAY ("U" key)

This very powerful command lets you place the contents of the EDIT window under or beneath a screen image. The UNDERLAY command can also be used in conjunction with

the INVERT screen command to mask and paint a black or white object a new color. You may switch back ' forth between TRANSPARENT, UNDERLAY and OPAQUE at any time.

ROTATE ("R" key)

The contents of the EDIT window are rotated 90 degrees counterclockwise each time the "R" key is pressed. This feature lets you take a single screen image and quickly reproduce it in several new relative positions.

This feature can cause problems when colored objects are rotated. When you rotate colored objects 90 degrees, the screen color representation will change due to the way colored pixels are displayed. The best results are obtained when solid, white objects or simple line drawings are rotated. The complementary colors return when the image has rotated 180 degrees.

TEXT MODE ("X" key)

Before entering the TEXT mode from the EDIT mode, set the EDIT window to one of the three legal text sizes. The legal sizes are W1, W2 or W4. You may also select a TRANSPARENT or OPAQUE window background prior to entering the TEXT mode.

After you select a text size, press the "X" key to enter the TEXT mode. The border of your screen will turn GREEN to indicate this mode. The keys may now be used in normal typewriter fashion. Letters may be placed anywhere on the screen by moving the TEXT window with the joystick. Many EDIT mode commands can be used while in the TEXT mode by holding down the "START" key while you press the proper EDIT command keys. However, the most consistant results are obtained by returning to the EDIT mode to manipulate the screen, change sizes, etc. Press the "ESC" key to exit the TEXT mode and return to the EDIT mode.

The GRAPHIC MASTER TEXT mode uses the Atari standard character font. A custom character font may be created with another program (such as the GRAPHICS GENERATOR from DATASOFT) and loaded in and used by GRAPHIC MASTER. To load a custom font file, enter the I/O

mode and type in the font's filename with the extension ".FNT". The custom font will load into an area of memory set aside for this purpose. When you return to the TEXT mode you can alternate between fonts by holding down the "START" key while you press the "A" key.

NOTE: *All character files must have been saved using the filename extension .FNT to be accessed by GRAPHIC MASTER.*

DRAW MODE ("D" key)

Press the "D" key while in the EDIT mode to enter the DRAW mode. This mode is indicated by an ORANGE border around the screen. Press the "ESC" key to return to the EDIT mode. Many EDIT mode commands may be called upon while in the DRAW mode to manipulate the screen.

LINES, CIRCLES and POLYGONS are easily drawn with special commands in this mode. Refer to the previous section on START UP AND STRUCTURE for a complete description of DRAW mode functions and features. At the end of this guide you will find some TIPS AND SECRETS which include the use of the DRAW mode for obtaining unique results.

ZOOM – Color ("Z" + Up or Down Arrow)

This feature is used to enlarge or reduce the size of an object within the EDIT window. The resulting image will be either twice the size or half the size of the original.

To enlarge an image, press the "Z" key, then the "Up Arrow" key. (This command will not work on an entire screen image). This has an effect similar to zooming in on an object with a camera lens. Because the maximum EDIT window size is ten (the "0" key) the largest window you are allowed to zoom in on is "5". Colors are maintained as the image is enlarged.

To reduce an image, press the "Z" key then the "Down Arrow" key. This will give the appearance of "zooming" away from the object. You can "zoom out" from any window size except #1. The best results are obtained using even numbered window sizes (2, 4, 6, and 8). Color integrity will be maintained as much as possible when zooming out, but remember that pixels are discarded when an object is reduced and that these pixels cannot be reclaimed if the image is re-enlarged.

This version of the ZOOM feature is intended to provide the best possible results with colored objects. For enlarging or reducing text, line drawings or solid white objects, the following, slightly modified version of this command is used.

ZOOM B&W ("Z" + "B" + Up or Down Arrow)

This command operates the same as the one described above. All pixels, however, are treated as black and white. If this command is used on a colored object, the colors may become black and white, or the object may disappear altogether. The purpose of this command is to provide the best possible results when enlarging or reducing text, line drawings or solid white objects. You are encouraged to experiment with both versions of the ZOOM command.

THE FOLLOWING KEY COMMANDS ARE USED TO MANIPULATE DATA IN THE EDIT WINDOW OR THE FULL SCREEN. HOLD DOWN THE CONTROL KEY WHEN YOU GIVE A COMMAND TO AFFECT THE ENTIRE SCREEN (BUT NOT THE WINDOW). IF THE CONTROL KEY IS NOT PRESSED, ONLY THE CONTENTS OF THE WINDOW ARE AFFECTED.

MIRROR ("M" KEY)

Press the "M" key to create a mirror image of the EDIT window contents. This feature is especially helpful in creating symmetrical objects. Hold down the "CTRL" key and the "M" key to create a mirror image of the entire screen without affecting the contents of the EDIT window.

INVERSE VIDEO ("I" key)

Use this command to change the contents of the EDIT window or the screen to their opposite colors. For example, when the "I" key is pressed, all black areas in the EDIT window turn white. Colored areas will change to their complementary counterparts.

Hold down the "CTRL" key and press the "I" key to INVERT the entire screen and leave the contents of the EDIT window unchanged. You may INVERT images from positive to negative without fear of permanent damage.

This feature can be used in conjunction with the "UNDERLAY" command to paint in a black or white area with color. (See TIP #3 at the end of this guide).

ARROW KEYS (↑ ↓ ← →)

The four arrow keys are used to "roll" the contents of the EDIT window in any direction. The image will move one pixel width at a time within the window border.

This feature automatically incorporates "same line wrap-around" and "top to bottom wrap-around" so that portions of your image are not lost. Hold down the "START" key to defeat the wrap-around feature.

If you pick up unwanted portions of an image, hold down the "START" key while you press the proper arrow key to shift the unwanted portions out of the EDIT window. Release the "START" key and use the arrow keys to re-center the image.

The entire screen, (except for the EDIT window), can be shifted by holding down the "CTRL" key while you press one of the arrow keys. This feature is handy for "fine" positioning an

object beneath the EDIT window before grabbing it. The current offset number determines the number of els the screen will shift horizontally. The screen will always shift vertically one line each time an arrow key is pressed.

NOTE: *To maintain correct colors when you shift a screen, you must shift it in even numbered offsets. Odd screen shifts produce complementary colors. This can be used to your advantage when creating new colors or changing the color of an object.*

SKEW ("Q" + "1" -"9" + Left or Right Arrow)

Use this feature to slant an image within the EDIT window to the left or to the right. Press the "Q" key first to begin the SKEW function. The number keys "1"-"9" are optional, and are used to indicate the amount of SKEW. Unlike other commands, the smaller numbers cause more SKEW, while the "9" key causes the least amount of SKEW. If you do not press a number key, GRAPHIC MASTER will assign a SKEW value of "3". Lastly, press one of the arrow keys, left or right, to indicate which direction you wish to SKEW the object. Same-line wrap-around is normal but may be defeated by holding down the "START" key while the image is being skewed.

The contents of the entire screen can be SKEWED without affecting the image within the EDIT window by holding down the "CTRL" key and the "Q" key at the same time.

Using this command can cause some unusual results. Watch the window or screen objects carefully. It may take several seconds for the SKEW command to execute on a full screen. We also recommend you remember the direction and value you use when skewing an object, just in case you wish to return it to its original shape. The SKEW command also tends to make a mess of image colors. The best results are obtained with white images. The title letters in the GRAPHIC MASTER logo were drawn with a white block and then skewed left and right prior to painting on their colors.

SPECIAL COMMAND FEATURES

SHIFT SCREEN ("SHIFT" + Left or Right Arrow)

This feature was included to correct differences in offset which may be present when you load a picture created and saved with another graphics program. This feature will help compensate for any difference in the number of header bytes in a picture data file.

Hold down the "SHIFT" key while you press the LEFT or RIGHT arrow keys to shift the entire screen one byte, (8 pixels), either left or right with NEXT-LINE WRAPAROUND. Use this feature with caution. It can cause vertical shifts at the edges of your screen if the "CTRL" + "Arrow" commands are later used to shift the screen contents while editing.

OVERLAY SCREENS ("START" + "CTRL" + "O")

This feature lets you OVERLAY the contents of one screen on to another. The contents of the "off" screen are layed over the screen on display. The contents of the "off" screen will remain unchanged.

PRINT ("START" + "P" key)

Hold down the "START" key while you press the "P" key to dump a copy of the current screen display to a printer. The display will print sideways on the paper to provide the greatest speed and correct aspect ratio. This version of GRAPHIC MASTER will support an Epson MX-70 or MX-80 with Graftrax ™ ROM's.

NOTE: *In order to use the NEC® 8023-A printer with GRAPHIC MASTER, you must first run a BASIC program on the diskette called CHANGE.PRT. To run this program you must first "boot" a standard Atari Master diskette. Once you run the program, GRAPHIC MASTER will always boot into the correct program for your printer. Run the program again if you ever wish to change printers. Make sure your diskette is not write-protected.*

Pictures are normally printed left justified on th age. A second set of print commands are included create)ecial effects on the printed page. A complete description of this sequence follows.

TAB PRINT ("START" + "TAB" + "P" keys)

Each time you press the "TAB" key and the "START" key at the same time, you add 8 spaces to the left margin of your paper when a screen is printed. This feature is used to center your picture on the page or to print multiple pictures on a single page. With care, it is possible to print a mosaic of four screens on a single page.

To center a picture horizontally on the page, hold down the "START" key and press the "TAB" key three times. Press the "P" key to begin printing.

To lay down a series of pictures on a page, print the first picture using the "START" + "P" command. Do not use a "TAB" comand so your picture will print left-justified. Re-align the paper in the printer back to the top of the page and print picture #2. Enter four "TABS" before you press the "P" key. This should place picture #2 immediately to the right of picture #1. You can now lay down two more pictures side by side on the bottom half of the page to complete your four screen mosaic.

Pictures created by GRAPHIC MASTER may be printed out in full color on an Epson or NEC® printer using Datasoft's COLOR PRINT program (available separately).

TIPS AND SECRETS

During our own experimentation with GRAPHIC MASTER, we discovered combinations of features which produce unique results. These combinations and their results may not be obvious, so we'd like to share them with you here. With the numerous commands and possible combinations available, we are sure that many of you will find new things to do with GRAPHIC MASTER. Send us your tips and suggestions and we will pass them along in future publications.

1. The INVERT command, ("I" key), has several special uses. To erase a line or dot while in the DRAW mode, INVERT the screen, ("CTRL" + "I"), and re-draw the line or dot. When you

re-INVERT the sc[illegible]n the line or dot is gone. Also use this method to draw a [illegible]ack line on a white object. Inverting the window with the "[illegible] key helps you see the window borders without dropping the object you are carrying.

2. Use this tip to draw a perfect white square. Start with the EDIT window and a black background. Use the ERASE command ("E" key) then the INVERT command ("I" key) to form a solid white block within the window. Now, hold down the "START" key and press the "Up Arrow" key 4 times, then the "Down Arrow" key 2 times. Still holding down the "START" key, press the "Right Arrow" key 4 times, then the "Left Arrow" key 2 times. Now, INVERT the window again with the "I" key. Presto!

3. The INVERT SCREEN command can be combined with the UNDERLAY command to paint any odd shaped WHITE area a new color.

To see how this works, load the PALETTE file (provided), to one of the screens. FLIP to the alternate blank screen ("F" key), select a window size of four (W4) and enter the TEXT mode ("X"). Type the word "COLOR" in the center of the screen. Next, return to the EDIT mode ("ESC") and select a window size of one (W1). Flip to the other screen and "grab" a color from the pallet. Return to the screen and INVERT it ("CTRL" + "I"). Press "I" to INVERT the color in the EDIT window. Now press "U" to enter the UNDERLAY mode and use the joystick to paint in the now black letters. When you finish, re-INVERT the screen ("CTRL" + "I") and you should have a colored word.

4. Special multi-colored characters may be layed down in the TEXT mode if you select window size 2 or 4. Hold down the "START" key and press the "Z" key, then the "SPACE" bar. Your text will now be multi-colored. You must exit the TEXT mode with the "ESC" key and press the "X" key again to return to WHITE text.

5. Another way to move the EDIT window from screen #1 to screen #2 is to "Drive Across" screen boundries. Use the joystick to move the window off the bottom of screen #1 to the top of screen #2, or vice versa. When the EDIT window leaves the current screen, press the "SELECT" key to switch views.

There is a small buffer area at the bottom of screen #2 which allows the EDIT window to overlap the boun   y limits. This gives you more freedom in working with your designs. Rather than TRAP this area and prevent window entry, we decided it was more productive to let you make use of it. The SHIFT commands will often eliminate any unwanted window contents.

6. To make the EDIT window invisible, use the ERASE command ("E" key) in combination with the TRANSPARENT command ("T" key) to fill the EDIT window with black and make it transparent. Although the window cannot be seen, it can still be moved around the screen. If you lose the window, press the "B" key to return the BORDER, or INVERT the window with the "I" key. Use the "SELECT" key to check the other screen if these steps do not reveal the location of the EDIT window.

CONVERTING PICTURES FOR GRAPHIC MASTER

We have included a program on your GRAPHIC MASTER diskette called "PICDISK". This BASIC program lets you SAVE Graphics mode 8 pictures created by other programs for use with GRAPHIC MASTER or COLOR PRINT (Also from Datasoft).

The "PICDISK" program can be RUN from most other BASIC graphics generating programs which provide a Mode 8 graphics screen display. To CHAIN this program, add a line to the host program which checks to see if the "START" key is pressed. An example of such a line might be:

```
100 IF PEEK(53279)=6 THEN RUN"D:PICDISK"
```

This line must contained within a running loop (such as the JOYSTICK routine), so the "START" key will be checked continuously during the main program.

When the "PICDISK" program loads and RUNS, your graphics screen picture should be preserved. "PICDISK" will list your I/O options in a text window at the bottom of your screen. To SAVE a picture, press the "S" key and enter the filename. The device designator (D:) and drive number may be omitted on single-drive systems. On two drive systems, you must enter the device designator and drive number as required by Atari DOS, (eg. D2:filename), to save your picture to drive #2. The resulting picture file can now be LOADED with PICDISK, GRAPHIC MASTER or COLOR PRINT.

NOTE: *The PICDISK program will ONLY preserve the entire graphics screen if you do not enter another Graphics Mode while chaining from your host program to PICDISK. Please use caution when modifying your host program to ensure that graphics mode criteria are maintained while I/O functions are accessed. DO NOT use the "SYSTEM RESET" or "BREAK" keys. They will set graphics mode 0 and destroy the bottom section of your screen.*

Since the PICDISK program also allows the LOADing of pictures to the screen, it can be used to display pictures created with GRAPHIC MASTER or your other graphics programs, without the use of the GRAPHIC MASTER program diskette. Simply SAVE a copy of PICDISK on each of your diskettes containing Mode 8 graphics pictures. Thereafter, place the picture diskette in drive #1 and enter the following command from BASIC:

```
RUN"D:PICDISK
```

You can also append the PICDISK program to your graphics program and CALL it as an added SUBROUTINE. To do this, line numbers and variable names in each program must be checked for duplication and changed if necessary. When this process is completed, LOAD the PICDISK program and LIST it back to disk. You can now load your host program into your computer and type:

```
ENTER"D:PICDISK
```

• When BASIC control returns, add the appropriate "GOSUB" line to your program to jump to the new SAVE and LOAD routines in PICDISK. Don't forget to change the last line of PICDISK to "RETURN" if it goes back into the main program routines or exits prematurely.

This ends the GRAPHIC MASTER instruction guide. Thank you for purchasing GRAPHIC MASTER, another fine computer program from Datasoft.

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GRAPHIC MASTER
QUICK REFERENCE CARD

KEY(S)	FUNCTION
B	BORDER frame is returned to EDIT window.
C	CIRCLE is drawn from DRAW mode. Hold OPTION key to fill.
D	DRAW mode (orange border). Press ESC to return.
D	DISPLAY a diskette Directory from I/O mode.
E	ERASE. EDIT window turns black.
F	FLIP the EDIT window to the alternate page.
G	GRAB a copy of the image under the EDIT window.
I	INVERT the image in the EDIT window.
L	LOAD a picture or symbol file while in I/O mode.
L	LINE. Pick starting and ending points for a line from DRAW mode.
M	MIRROR the image in the EDIT window.
O	OPAQUE. Make contents of EDIT window opaque to screen.
Q→←	SKEW or slant contents of EDIT window in direction of arrow.
R	ROTATE image in EDIT window 90 degrees.
S	SAVE a screen image to diskette.
T	TRANSPARENT. Make contents of EDIT window transparent to screen.
U	UNDERLAY. Place EDIT window contents under background image.
W	WINDOW. Select EDIT window size (1-0).
X	TEXT mode (green border). Press ESC key to return.
Z↑↓	ZOOM (Color). Enlarge or shrink contents of EDIT window.
ZB↑↓	ZOOM (B&W). Enlarge or shrink contents of EDIT window.
1-0	OFFSET sets distance cursor or EDIT window moves across screen.
SPACE	*Locate DRAW cursor on screen.*
OPTION	Enter I/O mode to Load or Save a picture.
SELECT	Change display from screen 1 to screen 2 and back again.
START	Prevents same line wrap-around in shift and skew operations.
P + (3-9)	POLYGON is drawn at DRAW cursor position. (Size/P/# of sides).
CTRL	Direct following command to affect entire screen and not the EDIT window. (Hold CTRL key & command key down at the same time.
↑↓→←	Roll the contents of the EDIT window 1 pixel in the direction of arrow. Press CTRL at the same time to roll entire section.)
START+A	ALTERNATE between fonts while in Text mode.
START+P	PRINT screen image to printer.
START+TAB	TAB over 8 spaces to printer.
START+CTRL+E	ERASE entire screen.
START+CTRL+O	OVERLAY the contents of one screen on the other.

TIPS

ET	Make EDIT window invisible.
EI	Make EDIT window a white block.
Q→R→Q	Skew, Rotate & Skew to rotate an image in increments less than 90 degrees.